

## Patent claims

1. Method for three-dimensional detection of objects (3), in which

- a color pattern (5) with known projection data is projected onto the object to be detected (3),

5 - the color pattern (5) projected onto the object (3) is recorded with a camera (6), and

- the image (7) recorded by the camera (6) is processed in an analysis unit (9) into three-dimensional object coordinates of the object (3),

10 characterized in that,

the projection data in the color pattern (5) is encoded with the aid of a redundant code.

2. Method in accordance with Claim 1,

in which color values in the color pattern (5) are structured with

15 the aid of codewords of a redundant code and in which the projection data of a point (P) of the image (7) are identified with the aid of a search performed by the analysis unit (9) for the codewords encoding the color values.

3. Method in accordance with Claim 1 or 2,

20 in which color changes of the color pattern (5) are structured with the aid of codewords of a redundant code and in which, during analysis in the analysis unit (9), the codewords are allowed corresponding color changes as valid color changes.

4. Method in accordance with Claim 2 or 3,

25 in which codewords with a non-trivial Hamming distance are used.

5. Method in accordance with one of the Claims 2 to 4,

in which the codewords are arranged so that they overlap.

6. Method in accordance with one of the Claims 1 to 5,  
in which the color values are varied in each color channel between  
two values.

7. Method in accordance with Claim 6,  
5 in which the color values are varied in each color channel between a  
minimum value and a maximum value.

8. Method in accordance with one of the Claims 1 to 7,  
in which the color values are changed in at least two channels  
together and in which color changes occurring in at least two color  
10 channels are allowed as valid color changes during analysis in the  
analysis unit (9).

9. Method in accordance with one of the Claims 1 to 8,  
in which, in each color channel within each codeword at least one  
color change is performed.

15 10. Method in accordance with one of the Claims 1 to 9,  
in which in the analysis unit (9) the position of color changes in  
each color channel is determined with the aid of extreme values of a  
first derivation (12) of a measurement signal (11).

11. Method in accordance with one of the Claims 1 to 10,  
20 in which the color pattern (5) is formed as stripes and in which,  
during analysis in the analysis unit (9), color changes  
corresponding to each other are combined into profile lines (15).

12. Method in accordance with one of the Claims 1 to 11,  
in which an individual recording of the image (7) for determining  
25 the three-dimensional coordinates of the surface (2) of the object  
(3) is performed.

13. Method in accordance with one of the Claims 1 to 12,  
in which, by evaluating the color of the color pattern (5) recorded  
in the image (7)

and the color originally projected in the color pattern (5) a coloring of the surface (2) of the object (3) is reconstructed.

14. Device for three-dimensional detection of objects with a projector (4) to project a color pattern (5) onto a surface (2) of an object to be recorded (3) and with a camera (6) to record an image (7) of the color pattern (5) projected onto the surface (2), as well as with an analysis unit (9) for analyzing the image (7), characterized in that the color pattern (5) that can be projected by the projector (4) and the analysis unit (9) are set up to execute the method in accordance with one of the Claims 1 to 13.

15. Use of the method in accordance with one of the Claims 1 to 13 or of the device in accordance with Claim 14 for recognizing the faces of people.

16. Use of the method in accordance with one of the Claims 1 to 13 or the device in accordance with Claim 14 for recognizing the gestures of people.